



January—February 2005

Seattle Fault earthquake major threat

More than 450 local, state and federal officials jammed the Bellevue Double Tree Inn conference center Feb. 28 to hear the findings a three-year study of the impact of a major earthquake on the Seattle Fault to the Central Puget Sound region.

In the study, a 12-member team of scientists, engineers, planners, emergency managers, and social scientists examined what might happen in a magnitude 6.7 earthquake on the Seattle Fault. The team, in a report published later this spring, also makes high-level recommendations to local and state decision makers on improving earthquake safety in the impacted region and the state.

Their scenario projected a magnitude 6.7 earthquake at shallow depth that raises the south side of the fault 6.5 feet. The fault ruptures the surface for 14 miles, from Harbor Island east to Issaquah.

The study projected the following impacts of such an earthquake in Central Puget Sound:

- 1,660 dead, and 24,200 injured.
- 9,700 buildings destroyed, 29,000 buildings severely damaged and unsafe to occupy.
- 154,500 buildings moder-

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Contaminated smoke from this Grandview, Wash., agricultural warehouse fire forced the evacuation of more than 100 homes from Jan. 26-28, (KNDU-TV Photo)

Fire forces Grandview evacuations

Contaminated smoke from an agricultural warehouse fire forced the evacuation Jan. 26 of more than 100 homes at Grandview, Wash., a town about 8,500 population about 40 miles southeast of Yakima.

The 50x70 foot metal warehouse housed agricultural chemicals, some of which were dry or powder organo-phosphates, composed of exactly the same chemistry as chemical agents housed at the in rockets and artillery shells at the Umatilla Chemical Depot.

Several Grandview area residents who complained of skin irritation or respiratory distress were taken to Prosser Memorial Hospital, where staff trained in the Chemical Stockpile Emergency Preparedness Program (CSEPP) decontamination procedures used CSEPP-funded equipment to decontaminate one patient and to treat another 20 to 25 persons.

The evacuations were lifted Jan. 28 when emergency responders allowed the fire to burn itself out rather than to use foam or water that could cause additional cleanup and contamination problems. Firefighters were unable to determine a cause of the fire at the warehouse, owned by Wilbur Ellis, an international marketer and distributor of agricultural and industrial products.

Assisting local officials in the emergency response were Koenraad Marien, toxicologist, and Milo Straus, CSEPP planner, both state Department of Health employees; and Rick Bowman, an emergency coordinator with the state Department of Ecology.

New study reveals Seattle Fault earthquake threat

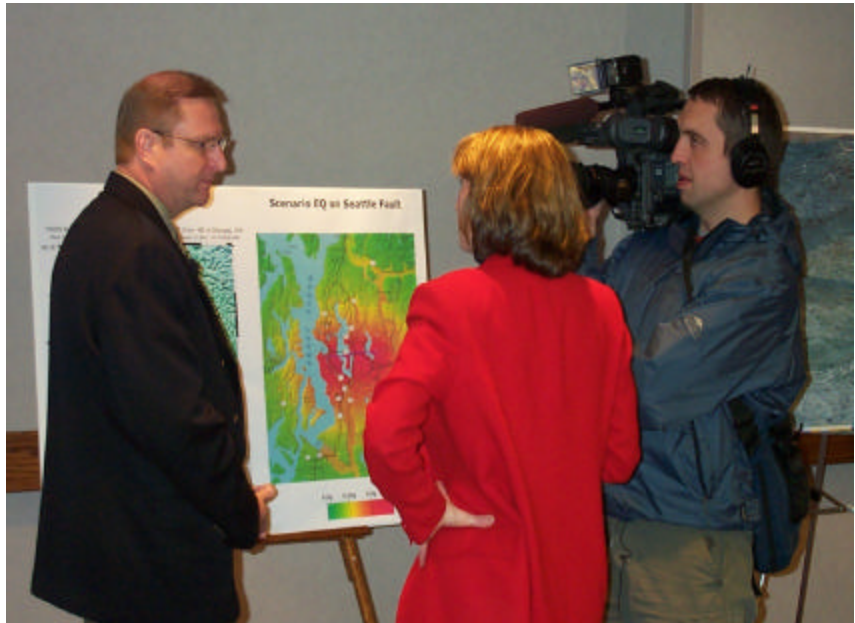
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ately damaged with use restricted.

- 130 fires burn.
- All six major highways experience partial closures lasting months due to substantial damage, and collapsed bridges.
- Utilities cut in areas with poor soils.
- Port facilities badly damaged, use restricted.
- Operations of businesses relying on “just-in-time” deliveries disrupted by collapsed supply warehouses, transportation closures, and communication outages.
- \$33 billion in damages, second only to the 1994 Northridge Earthquake in southern California.
- By comparison, the 6.7 magnitude Nisqually Earthquake of 2001 caused no deaths, 320 injuries and economic damage of between \$2 and \$4 billion.

The study team made the following priority recommendations:

- Establish a funded state-level seismic safety board or commission, reporting directly to the Governor to recommend policies and programs to reduce the earthquake risk in Washington.
- Require mandatory seismic retrofits of high-risk buildings, such as unreinforced masonry and tilt-up struc-



Mark Stewart, left, hazard mitigation specialist with the Emergency Management Division, talks to a Seattle television station news crew about the implications of the three-year Seattle Fault study. (EMD Photo)

tures.

- Identify critical public facilities with a high seismic risk and establish plans to improve their earthquake safety.
- Quicken the pace of protecting seismically vulnerable critical transportation infrastructure, such as freeways, highways, and local bridges.

Other recommendations from the Seattle fault study team included:

- Accelerate earthquake hazard assessments, geological mapping, and the use of such studies.
- Develop innovative programs to educate and motivate the public, public agencies, and the business community to act so they are self-sufficient

for at least 72 hours following an earthquake.

- Provide adequate funding to upgrade the region's seismograph network to make it more robust and to enhance its capabilities.
- Develop incentives to increase the level of seismic safety in public and private buildings.
- Establish an earthquake information clearinghouse to improve access to best available science and best practices for earthquakes.

Members of the Seattle Fault study team were:

- **Don Ballantyne**, P.E., director, operational risk and performance consulting division, ABS Consulting, Seattle; and board member, Earthquake Engineering Research Institute, Seattle.
- **Stacy Bartoletti**, P.E., S.E.,

Local officials, responders discuss Seattle Fault study

structural engineer and principal, Degenkolb Engineers, Seattle, and board member, Cascadia Region Earthquake Workgroup.

- **Susan Chang**, Ph.D., P.E., senior principal engineer, geotechnical earthquake engineer group, Shannon and Wilson, Inc., Seattle; and immediate past director of technical groups for Seattle section – American Society of Civil Engineers.
- **Barb Graff**, manager, division of emergency preparedness, city of Bellevue Fire Department.
- **Gregory MacRae**, Ph.D., P.E., associate professor, Department of Civil and Environmental Engineering, University of Washington.
- **Jacqueline Meszaros**, Ph.D., Associate Professor - Business, University of Washington, Bothell, WA., and Program Director, Decision, Risk and Management Sciences, National Science Foundation, Arlington, VA.
- **Ines Pearce**, program manager, Seattle Project Impact, city of Seattle Emergency Management; and board member, Cascadia Region Earthquake Workgroup.
- **Mark Pierpiekarz**, P.E., S.E., engineer and president, MRP Engineering, LLC, Newcastle; and president,



Jim Mullen, left, Washington Emergency Management Division director, presents closing remarks to the Seattle Fault conference Feb. 28 in Bellevue. Don Ballantyne, right, director, ABS Consulting, was a member of the study team. (EMD Photo)

Seattle chapter, Structural Engineers Association of Washington.

- **Jane Preuss**, AICP, land use and environmental planner, Planwest Partners, Kirkland.
- **Mark Stewart**, hazard mitigation strategist, Washington Emergency Management Division, Camp Murray.
- **Dave Swanson**, P.E., S.E., principal and director, structural engineering, Reid Middleton Inc., Everett; and chair, emergency preparedness committee, Structural Engineers Association of Washington.

- **Craig Weaver**, Ph.D., seismologist and Pacific Northwest coordinator, National Earthquake Program, U.S. Geological Survey, Seattle; and board member, Cascadia Region Earthquake Workgroup.



Dr. Eddie Bernard, administrator of the National Oceanic and Atmospheric Administration's Pacific Marine Environmental Laboratory in Seattle discusses the wave action of the Dec. 26 South Asia tsunami at the Coastal Tsunami Summit Feb. 9 at Long Beach. (EMD Photo)

Tsunami threat coast summit focus

In the wake of the devastating south Asia earthquake and tsunami episode Dec. 26, Washington's tsunami preparedness is seen as a mixture of success and challenge.

That was the consensus view of emergency managers, geologists, and planners at a Coastal Tsunami Summit Feb. 9 at Long Beach.

Jim Mullen, Washington Emergency Management Division (EMD) director, said that concerted action by everyone involved in tsunami preparedness would be needed to obtain the resources to establish a comprehensive tsunami alert and preparedness program.

There must be "an approach that articulates the links between placement of the buoys (in the ocean), analysis of data,

transmission of warnings and the education of our people on the street –so they can take protective action they have learned and practiced," said Mullen.

"It's important nationally and internationally as well that we make use of this opportunity (created by the South Asia disaster) to avert another catastrophe," he added. "We'll only get one chance to get this right, and we need to do it together."

Other highlights of the conference were:

- Dr. Eddie Bernard, administrator of the National Oceanic and Atmospheric Administration's (NOAA) Pacific Marine Environmental Laboratory, said the South Asia tsunami was now believed to be the largest ever recorded, circling the globe

from Asia to Brazil and Halifax, Nova Scotia. On the Sumatran coastline, he said ground shaking lasted five minutes, and the tsunami sequence continued about 12 hours and with peak waves as high as 120 feet. Emergency responders found on average five dead persons for every injured person.

- Craig Weaver, seismologist and Pacific Northwest coordinator, National Earthquake Program, U.S. Geological Survey, said there were two potential types of earthquakes along the Cascadia Subduction Zone.

One might be an event that ruptures the entire fault line from northern California to British Columbia, and the second could be a partial rupture perhaps more along the northern California – Oregon section of the fault. Even though a warning system may not be of great help in the near shore-total fault rupture event, he said a warning system could be helpful in a partial rupture event.

- George Crawford, EMD earthquake program manager, said the biggest problem facing Washington now was "getting warning to the people on the beach." He said inundation mapping had been done for the coastal areas and NOAA weather radio coverage now covers all of the Washington coast

Tsunami threat coast summit focus

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- as well as 50 miles out to sea. He said Washington had installed four all-hazard alert broadcast loudspeakers along the coast, but needed 90 such systems to cover the entire coast.
- Tim Walsh, geologist with the state Department of Natural Resources, said tsunami evacuation plans were needed not only for the coastal areas but also for the Strait of Juan de Fuca and such Puget Sound areas as Port Townsend, Bellingham and Padilla Bay. He added that land management practices such as the removal natural barriers of dunes along the coast should be discontinued.
 - Stephanie Fritts, Pacific County emergency management director, said the development of evacuation routes from inundation maps was a complex problem. It is important to get local advice about routes as well as use the scientific data from the maps to develop the routes. She added that highest priority now was for traffic evacuation modeling to address how to get 20,000 cars off of the Long Beach Peninsula. Fritts also noted that the county uses the Pacific County Emergency Preparedness Network to notify citizens by telephone calls.

Partners conference set April 19-20

Former Washington U.S. Sen. Slade Gorton and Maj. Gen. Timothy J. Lowenberg, director, Washington Military Department, will be featured speakers at the April 19-20 Partners in Preparedness Conference in Bellevue's Double Tree Hotel.

Gorton, who served as a member the national 9-11 Commission, will address the conference on April 19 and Lowenberg will speak April 20. More than 500 persons are expected to attend the event, which will include presentations ranging from the Future Threat of Terrorism to Crisis Communications and Infrastructure Resiliency.

The conference is presented through a partnership between the Washington State Emergency Management Division and the Seattle Chapter of the American Red Cross. Sponsors of the conference include Perkins Cole, Audience Central, Seattle Public Utilities and Puget Sound Energy.

Conference registration is \$275 before March 30 and \$375 afterwards.

For more information, or to register for the conference, call Washington State University Conferences at 800-942-4978 or visit the conference website: <<http://capps.wsu.edu/emergencyprep>>

April disaster preparedness campaign set

April will be disaster preparedness month in Washington, highlighted by a statewide "Drop, Cover and Hold" earthquake drill on April 21 between 9:45 and 10 a.m.

Preparedness month packets will be available from local emergency managers in mid-March. Packet materials will include a Disaster Preparedness Handbook, 9-1-1 information, and a new tsunami lessons poster. These campaign materials will be available to download from the Emergency Management Division (EMD) website at www.emd.wa.gov.

Additional information can be obtained from EMD's Barbara Everette Thurman, disaster preparedness month coordinator at 253-512-7047.

Bailey named to national board

Steve Bailey, director, Pierce County Department of Emergency Management, was named Feb. 11 to the new nine-member U.S. Fire Administration Policy and Program Advisory Board by the U.S. Secretary of Homeland Security.

Bailey will serve a two-year term on the board which is to provide advice and recommendations on fire and emergency management policy and programs issues to the U.S. Fire Administrator.

EMD staff recognition, awards

Donna Voss, supervisor of the Public Assistance Section of the Response and Recovery Unit, was presented her 15-year state service award in a ceremony Jan. 27. She began her state service in the Department of Community, Trade and Economic Development in 1989 and joined the Disaster Recovery Unit of the Washington Emergency Management Division (EMD) in 1992.

Michael Gordon, emergency management training program manager, received his five-year state service award Jan. 27. Besides overseeing EMD-sponsored training for local emergency managers and first responders throughout the state, Gordon is the Partners in Preparedness Conference coordinator. He joined EMD in November 1999.

Mark Stewart, mitigation strategist, was awarded an EMD Certificate of Appreciation Jan. 27 for his work as primary author of the state's new Hazard Mitigation Plan which was approved July 1 by the Governor and the Federal Emergency Management Agency Regional Director as the nation's first enhanced state mitigation plan.

Hannah Hguyen was presented a Washington Military Department EMD Certificate of Appreciation Jan. 27 for her work as grants management analyst in tracking 460 disaster assistance provided to victims of the October 2003 floods disaster.

Jill Christian, financial analyst 4, received a Washington National Guard Family Program Certificate of Appreciation for her role in the successful and timely distribution of 460 disaster assistance awards totaling \$1.1 million to victims of the October 2003 floods disaster.

Maillian Uphaus, training section supervisor in the Plans, Preparedness and Training Unit, was presented with a Washington Military Department Certification of Appreciation Feb. 24 for her sponsorship of a family of a deployed Washington National Guard soldier during the Christmas holiday season of 2003.

Kathy Paterson, secretary administrative in the Response and Recovery Unit, was honored Feb. 24 for her 15 years of state service. She began state service as a secretary in the Department of Social and Health Services in 1989 and joined EMD's Operations Unit in 1996.

Marty Best, state hazard mitigation programs manager, received a Washington Military Department EMD Certificate of Appreciation Feb. 24 for his efforts on hazard mitigation planning. Through his assistance, 500 jurisdictions covering about 80 per cent of the state's population now have local hazard mitigation plans that meet federal criteria under the Disaster Mitigation Act of 2000.

Laura Goudreau joined EMD Mar. 1 as a logistician within the analysis and plans section of the Mitigation, Analysis and Plans Unit. She previously worked in the private sector.

MG Lowenberg reappointed

In her first cabinet selection, Gov. Christine Gregoire reappointed Maj. Gen. Timothy Lowenberg as state adjutant general Jan. 5.

"We are fortunate to have such a top-notch leader as head of our military and emergency forces and I'm pleased that he has agreed to continue in that post," Gregoire said.

Maj. Gen. Lowenberg has served as Adjutant General since September 1999 and heads the state's Army and Air National Guard units and the state's Emergency Management Division. He also serves as Homeland Security Adviser to the Governor.



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**Major General
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**Rob Harper, Mark Clemens, Penelope
Cassidy, Editors**

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The Washington Emergency Management division, including the State Emergency Operations Center, is located in Building 20 on Camp Murray, located at exit 122 on Interstate 5 south of Tacoma, Washington.